

Applicant: Tomomi Yamanobe
Appl. No.: 09/893,487

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11. The wiring layer structure according to Claim 1, wherein said first and second coating parts are TiN-sputtering films, and said third coating part is a TiN-CVD film.
 12. The wiring layer structure according to Claim 1, wherein said first coating part is a TiN-sputtering film, said second coating part is a built-up film composed of a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a TiN-CVD film.
 13. The wiring layer structure according to Claim 1, wherein said first coating part is a TiN-sputtering film, said second coating part is a built-up film formed from a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a built-up film formed from a Ti-CVD film and a TiN-CVD film.
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Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-5 and 7-15 are pending in the application, with claim 1 being the independent claim. Claim 6 is sought to be cancelled without prejudice to or disclaimer of the subject matter therein. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Based on the above Amendment and the following Remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

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Rejections under 35 U.S.C. § 112

Claims 6-13 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 7-13 have been rejected under 35 U.S.C. § 112, second paragraph, because they depend directly or indirectly from a rejected claim. In response to this rejection, Applicant has cancelled claim 6 and amended claims 7-13 to depend from amended claim 1.

Rejections under 35 U.S.C. § 103

Claims 1-13 have been rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,165,802 to Cuchiaro et al. (“Cuchiaro”). Specifically, the Examiner asserts that claims 1, 2, 5, 8, 9, and 11-15, are unpatentable because the product-by-process limitations produce a product that is obvious from the product of Cuchiaro. Applicant respectfully disagrees. The limitations identified by the Examiner as product-by-process limitations are actually characteristics of the substance comprising the claimed wiring structure. For example, in the claimed apparatus, the claim recitation “to produce a reducing agent,” recites properties of substance comprising the main wiring layer. This claim recitation has no relationship to how the main wiring layer is formed.

Claim 1 has been amended to further distinguish the Applicant’s product from that of Cuchiaro. Claim 1 now recites:

a first coating part provided between said main wiring layer and said first electrode; a *second coating part* provided on the top surface of

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said main wiring layer; and a *third coating part* provided on side faces of said main wiring layer.

For example, reading claim 1 on the embodiment illustrated in figure 1, a wiring layer structure connected to a first electrode of a ferroelectric capacitor having first and second electrodes is provided. The wiring structure comprises a main wiring layer 30 and a coating layer on the outer periphery of this main wiring layer. The main wiring layer comprises a first material that reacts with a substance that infiltrates from the outside to this main wiring layer to produce a reducing agent.

The coating layer comprises a *first coating part 20* provided between the main wiring layer and the first electrode; a *second coating part 40* provided on the top surface of the main wiring layer and a *third coating part 50* provided on the side faces of the main wiring layer. The coating layer is conductive and comprises a second material for preventing infiltration in the main wiring layer of the substance.

The three distinct coating parts of Applicant's amended claim 1 advantageously prevent any reaction between substances, i.e., water or molecular hydrogen on the surface of the main wiring layer. Because no reducing agent is provided in the main wiring layer, Applicant's invention more effectively prevents a degradation of the characteristics of a ferroelectric capacitor that is caused by the reaction.

Cuchiaro discloses a ferroelectric capacitor 118 comprising a top electrode 124 formed on a ferroelectric film 122. A barrier layer 126 is formed on the top electrode (col. 5, lines 14-21).

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A wiring layer 134 contacts the barrier layer 126. As is shown in Figure 1 of Cuchiaro, there is no second coating layer or third coating layer provided on the wiring layer 134. In particular, Cuchiaro does not teach or suggest, among other things, a *second coating part provided on the top surface of the wiring layer and a third coating part provided on the side faces of the wiring layer* as recited in the present claims. Accordingly, amended claim 1 is patentable for at least the above reasons. Claims 2-5 and 7-15 are also patentable based on their dependency from claim 1.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned at the number provided.

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Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,

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Version with markings to show changes made

In the Claims

Please cancel claim 6; amend claims 1 and 7-13 as follows:

1. A wiring layer structure connected to a first electrode of a ferroelectric capacitor having first and second electrodes, comprising:

~~a main wiring layer and a coating layer on the outer periphery of this main wiring layer,~~

~~wherein said main wiring layer comprises~~including a first material that reacts with a substance that ~~infiltrates from the outside to this main wiring layer and~~to produces a reducing agent, ~~said substance being infiltrated from the outside to this main wiring layer; and;~~ and

~~wherein said~~a coating layer ~~comprises~~ a second material that is ~~conductive~~including a first coating part provided between said main wiring layer and said first electrode, a second coating part provided on the top surface of said main wiring layer, and a third coating part provided on side faces of said main wiring layer; and ~~prevents infiltration into said main wiring layer of said substance.~~

wherein said coating layer is conductive and comprises a second material for preventing the infiltration of said substance into said main wiring layer.

7. The wiring layer structure according to Claim 16, wherein said first, second, and third coating parts are titanium nitride (TiN) films.

8. The wiring layer structure according to Claim 16, wherein said first and third coating parts are titanium nitride (TiN) films, and said second coating part is a built-up film composed of a titanium (Ti) film and a titanium nitride (TiN) film.

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9. The wiring layer structure according to Claim 16, wherein said first coating part is a titanium nitride (TiN) film, and wherein said second and third coating parts are built-up films composed of a titanium (Ti) film and a titanium nitride (TiN) film.

10. The wiring layer structure according to Claim 16, wherein said first coating part is a titanium nitride (TiN) sputtering film, and said second and third coating parts are TiN-CVD films.

11. The wiring layer structure according to Claim 16, wherein said first and second coating parts are TiN-sputtering films, and said third coating part is a TiN-CVD film.

12. The wiring layer structure according to Claim 16, wherein said first coating part is a TiN-sputtering film, said second coating part is a built-up film composed of a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a TiN-CVD film.

13. The wiring layer structure according to Claim 16, wherein said first coating part is a TiN-sputtering film, said second coating part is a built-up film formed from a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a built-up film formed from a Ti-CVD film and a TiN-CVD film.

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